

## SECTION 33 7711

### PAD-MOUNTED SWITCH ROUGH-IN

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#### LANL MASTER SPECIFICATION

When editing to suit project, author shall add job-specific requirements and delete only those portions that in no way apply to the activity (e.g., a component that does not apply). To seek a variance from applicable requirements, contact the ESM Electrical POC.

When assembling a specification package, include applicable specifications from all Divisions, especially Division 1, General Requirements.

Delete information within "stars" during editing.

Specification developed for ML-3 projects. For ML-1 / ML-2, additional requirements and QA reviews are required.

For the purposes of this Section, a "pad-mounted switch" consists of a single self-supporting enclosure containing up to four medium-voltage interrupter switches. Refer to ESM Chapter 7, Section G4010, Part 7.0 for additional information.

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#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Furnish and install rough-in for pad-mounted medium-voltage switch including the following:

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Edit the following article to match project requirements; pad mounted medium-voltage switch will be installed on either a manhole or on a concrete pad adjacent to an existing manhole. Refer to

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1. [Concrete pad.] [Manhole.]
2. Underground ductbank for medium-voltage cables.
3. Grounding provisions.

##### 1.2 LANL WORK

- A. LANL will furnish, install, and test pad mounted medium-voltage switch.
- B. LANL will furnish, install, terminate, and test medium-voltage cables.

##### 1.3 SUBMITTALS

- A. Construction Submittals: None

## 1.4 QUALITY ASSURANCE

- A. Comply with the requirements of the National Electrical Code and IEEE C2 National Electrical Safety Code.

## 1.5 SEQUENCING AND SCHEDULING

- A. Coordinate rough-in for medium-voltage pad-mounted switch with the LANL Support Services Subcontractor.

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Edit the following article to match project requirements; pad mounted medium-voltage switch will be installed on either a manhole or on a concrete pad adjacent to an existing manhole. Delete article if switch will be installed on a manhole.  
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- B. Schedule an inspection of the concrete pad before concrete is placed.

## PART 2 PRODUCTS

### 2.1 PAD-MOUNTED MEDIUM-VOLTAGE SWITCH (GFE)

- A. The LANL Support Services Subcontractor (KSL) will furnish tamperproof and weatherproof pad-mounted medium-voltage switch that will comply with IEEE C37.74 IEEE Standard Requirements for Subsurface, Vault, and Pad-Mounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems Up to 38 kV.

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Edit the following articles to match Project requirements. Pad-mounted switch unit will either be mounted on top of an electrical distribution manhole (standard for new construction) or on a concrete pad adjacent to an existing electrical distribution manhole. If switch will be mounted on a manhole, retain clause 2.2 and delete clauses 2.3 through 2.5. If switch will be mounted on a concrete pad, delete clause 2.2 and retain clauses 2.3 through 2.5.  
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### 2.2 MANHOLE

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Edit the following article to match Project requirements. Refer to Drawings ST-G4010-36 and ST-G4010-37 in Chapter 7 of the LANL ESM.  
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- A. Provide manhole with cover designed for mounting [one] [two] medium-voltage pad mounted switch unit[s].
- B. Refer to Section 33 7119, Electrical Underground Ducts and Manholes.

### 2.3 CONCRETE FORMWORK

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Edit the following article to match specification sections used in Division 3.  
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- A. Refer to Section [03 3001, Reinforced Concrete].

## 2.4 CONCRETE REINFORCEMENT

- A. Use ASTM A615 Grade 60 reinforcing steel bars in medium-voltage switch concrete pad.

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Edit the following article to match specification sections used in Division 3.  
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- B. Refer to Section 03 3001, Reinforced Concrete.

## 2.5 CAST-IN-PLACE CONCRETE

- A. For medium-voltage switch pad use concrete with minimum 3000 lb per sq ft strength, 4 to 6 percent entrained air, 3/4 inch maximum size aggregate.

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Edit the following article to match specification sections used in Division 3.  
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- B. Refer to Section 03 3001, Reinforced Concrete.

## 2.6 UNDERGROUND DUCTBANKS AND MANHOLES

- A. Refer to Section 33 7119, Electrical Underground Duct and Manholes.

## 2.7 GROUNDING

- A. Refer to Section 26 0526, Grounding and Bonding for Electrical Systems.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Examine surfaces and conditions, with Installer present, for compliance with installation tolerances and other conditions affecting rough-in for pad-mounted medium-voltage switch. Do not proceed with installation until unsatisfactory conditions have been corrected.

\*\*\*\*\*  
Edit the following articles to match Project requirements. Pad-mounted switch unit will either be mounted on top of an electrical distribution manhole (standard for new construction) or on a concrete pad adjacent to an existing electrical distribution manhole. If switch will be mounted on a manhole, retain clause 3.3 and delete clause 3.4. If switch will be mounted on a concrete pad, delete clause 3.3 and retain clause 3.4.  
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### 3.2 MANHOLE

- A. Refer to Section 31 7119. Electrical Underground Ducts and Manholes.

### 3.3 CONCRETE PAD INSTALLATION

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Project-specific pad-mounted switch pad construction details should be included in the Drawings.  
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- A. Install reinforced concrete pad of suitable dimensions for pad-mounted medium-voltage switch.
- B. Prepare level, compacted pad site in accordance with Section 31 2000, Earth Moving.

\*\*\*\*\*  
Edit the following article to match specification sections used in Division 3 and project requirements. A more substantial perimeter beam may be dictated by geotechnical conditions.  
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- C. Form medium-voltage switch pad in accordance with Section 03 3001, Reinforced Concrete.
  - 1. Provide perimeter turn down beam that is not less than 8 inches wide and extends not less than 12 inches below grade.

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Edit the following article to match specification sections used in Division 3.  
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- D. Reinforce medium-voltage switch pad in accordance with Section 03 3001, Reinforced Concrete, and as detailed on the Drawings.
  - 1. Extend reinforcing into perimeter beam.
  - 2. Provide not less than 2 inches of concrete cover over reinforcing steel.

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Edit the following article to match specification sections used in Division 3.  
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- E. Place concrete in accordance with Section 03 3001, Reinforced Concrete, Provide wood float finish with no depressions.
  - 1. Chamfer top edges and corners.
  - 2. Cure concrete not less than seven days before installing equipment.
- F. Install not less than four 5/8 inch diameter galvanized steel anchor bolts set at least 4 inches into pad to anchor pad-mounted switch to pad.

### 3.4 DUCT INSTALLATION

- A. Terminate medium-voltage ducts in the switch compartment areas of the medium-voltage switch pad as indicated on the Drawings.

- B. Install 6-inch concrete-encased duct from below each switch compartment at the switch pad to within 3 ft of existing manhole. The LANL Support Services Subcontractor will extend ducts into existing manhole.
- C. Refer to Section 33 7119, Electrical Underground Ducts and Manholes.
- D. Terminate each duct with a bell end fitting set 2 inches above the top of the concrete pad.

### 3.5 GROUNDING

- A. Terminate medium-voltage duct bank ground cables in switch compartment area of the medium-voltage switch pad. Provide compression ground lug to connect ground cable to medium-voltage switch ground pad in the switch compartment.
- B. Refer to Section 26 0526, Grounding and Bonding for Electrical Systems.

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 Edit the following article to match project requirements; pad mounted medium-voltage switch will be installed on either a manhole or on a concrete pad adjacent to an existing manhole. Delete article if switch will be installed on a manhole.  
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### 3.6 FIELD QUALITY CONTROL

- A. After switch pad is formed, conduits are installed, reinforcing bars are installed, but before concrete is placed, notify the LANL Support Services Subcontractor.
- B. Allow 3 working days in schedule for inspection by the LANL Support Services Subcontractor.
- C. Correct deficiencies noted before placing concrete.

### 3.7 MEDIUM-VOLTAGE SWITCH INSTALLATION

- A. The LANL Support Services Contractor will install the pad-mounted medium-voltage switch on the concrete pad.
- B. The LANL Support Services Contractor will install, test, and terminate the medium-voltage cables.

END OF SECTION

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Do not delete the following reference information.

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FOR LANL USE ONLY

This project specification is based on LANL Master Specification 33 7711 Rev. 0, dated January 6, 2006.